

REMARKS

The Examiner is thanked for the due consideration given the application. The specification has been amended to insert headings.

Claims 1 and 3-13 are pending in the application. Claim 2 has been canceled and its subject matter has been generally incorporated into claim 1, and the amendments to claim 1 find further support in, e.g., Figure 3 of the application. Claims 8-12 are newly presented. Support for new claim 8 can be found in the specification at page 4, lines 18-21. Support for new claims 9 and 10 can be found in the specification at page 4, lines 12 and 13. Support for new claims 11 and 12 can be found in the specification at page 5, lines 27-34. Support for new claim 13 can be found in the specification at page 6, lines 22-30.

No new matter is believed to be added to the application by this amendment.

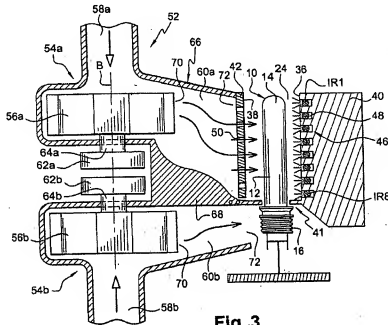
The Specification

The Official Action sets forth guidelines for the preferred layout of the specification. The comments in the Official Action have been considered, and the specification has been amended to insert headings to be in better conformance with the guidelines.

Rejection Under 35 USC §103(a)

Claims 1-7 have been rejected under 35 USC §103(a) as being unpatentable over ARMELLIN et al. (U.S. Patent 6,632,087) in view of VAUGHN et al. (U.S. Patent 6,888,103). This rejection is respectfully traversed.

The present invention pertains to a furnace for heating a tubular preform that is illustrated, by way of example, in Figure 3 of the application, which is reproduced below.



**Fig. 3**

Many of the features of Figure 3 are set forth in claim 1 of the present invention, which recites:

1. A furnace (22) for heating a preform (10), which comprises:

a longitudinal heating tunnel (24) bounded transversely by mutually parallel longitudinal

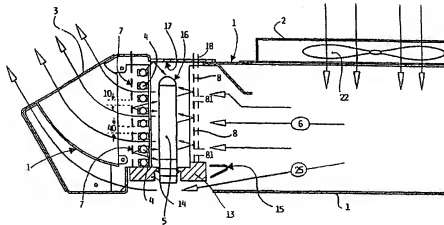
vertical internal faces (36, 38) of two walls (40, 42), one a heating wall (40), being equipped with a heating system (46), and the other an aerated wall (42), having aeration orifices (50), and in the heating tunnel (24), a first portion (12, 14) of the preform (10) is heated, while a second portion (16) of the preform (10) is held outside the heating tunnel (24) through a longitudinal opening (41) made between longitudinal edges of the walls (40, 42) of the heating tunnel (24);

a first fan (54a) that delivers a first air stream transversely in a first delivery duct (60a) from an upstream, outside the heating tunnel (24), to a downstream, inside the latter, in a direction of the first portion (12, 14) of the preform (10), by passing through the aerated wall (42);

a second fan (54b) that delivers a second air stream transversely which is parallel to the first air stream, in a second delivery duct (60b) from the upstream, outside the heating tunnel (24), to the downstream, directly to the second portion (16) of the preform (10), so as to keep the constituent material of this second portion (16) of the preform (10) at a temperature below its softening point; and

the two separate air delivery ducts (60a, 60b) being adjacent and formed by the upper and lower compartments of a common box (66) having a dividing partition (68).

ARMELLIN et al. pertain to an infrared heating oven for the conditioning of plastic performs. The Official Action refers to the drawing figure of ARMELLIN et al., which is reproduced below.



The furnace for heating the preform (5) of ARMELLIN et al. includes a longitudinal heating tunnel (24) bounded transversely by the mutually parallel longitudinal vertical internal faces of two walls (7, 8), one a heating wall (7), being equipped with a heating system (4), and the other an aerated wall (8), having aeration orifices (81), and in which tunnel a first portion (body) of the preform (5) is heated, while a second portion (neck) of the preform (5) is held outside the heating tunnel through a longitudinal opening made between the longitudinal edges of the walls (7, 8) of the heating tunnel.

In ARMELLIN et al., a first fan (22) delivers a first air stream transversely in a first delivery duct (6) from the upstream, outside the heating tunnel, to the downstream, inside

the latter, in direction of the first portion (body) of the preform (5), by passing through the aerated wall (8), and a second air stream is delivered transversely in a second delivery duct (25) from the upstream, outside the heating tunnel, to the downstream, directly to the second portion (neck) of the preform (5).

The differences between the claim 1 of the present invention and ARMELLIN et al. include the following:

- the furnace as defined in claim 1 of the present invention includes a second fan (54b) that delivers the second air stream; and

- the two separate air delivery ducts in claim 1 of the present invention are adjacent and formed by the upper and lower compartments of a common box having a dividing partition.

The Official Action notes that ARMELLIN et al. appear to perform the cooling of the two portions of the preform by two separate air streams which are blown from the fans into the tunnel.

On the other hand, the two air delivery ducts in ARMELLIN et al. are not formed by the upper and lower compartments of a common box having a dividing partition. Indeed, as represented in the drawing figure (reproduced above), ARMELLIN has a conduit 1 at the end of which are provided means 15 adapted to divert a part of the cooling air flow. However, the box formed

by the conduit 1 is not divided into two compartments because most of the volume is common to the two air streams 6, 25.

VAUGHN et al. pertain to a preform preheater. The Official Action refers to the fans 74 in Figure 3 of VAUGHN et al. (reproduced below) to address the deficiencies of ARMELLIN et al.

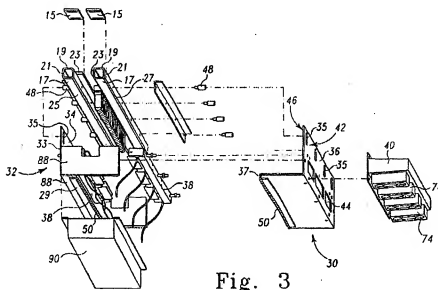


Fig. 3

As shown in Figure 3, the furnace (30) of VAUGHN et al. includes:

- a longitudinal heating tunnel bounded transversely by the mutually parallel longitudinal vertical internal faces of two walls (33, 36), one a heating wall (33), being equipped with a heating system (38), and the other an aerated wall (36), having aeration orifices (44), and in which tunnel a first portion

(preheated) of the preform (14) is heated, while a second portion (non preheated) of the preform (14) is held outside the heating tunnel through a longitudinal opening made between the longitudinal edges (23) of the walls (33, 36) of the heating tunnel;

- a first fan (74) that **aspires** a first air stream transversely in a first delivery duct (40); and
- a second fan (74) that **aspires** a second air stream transversely.

The differences between the claim 1 of the present invention and VAUGHN et al. are as follows.

The fans (74) are arranged along the tunnel, each fan (74) being associated with a section of the tunnel as can be seen in figure 3. All the fans (74) comprises only one common air duct (40) which is connected with orifices (44) of the aerated wall.

Contrary to claim 1 of the present invention, the furnace does not include a second air duct that is connected directly with the second portion of the preform.

Moreover, **each fan** (74) of VAUGHN et al. generates one air stream transversely to the first portion of the preform (14) through the aerated wall (36) **and** to the second portion of the same preform (14) that is in the associated section of the tunnel.

Thus, in contrast to the furnace defined in claim 1 of the present invention, the furnace disclosed in VAUGHN et al.

does not include a fan that delivers a second air stream **directly** to the second portion of the preform (14).

Moreover, the air streams are blown from the upstream inside the tunnel to the downstream outside the tunnel in direction of the fans (74) through the openings 44 (column 5, lines 58-61). The fans (74) work by **aspiration** of air from the tunnel and not by blowing air from the fan into the tunnel. The air stream passes first around the neck of the preform, the air being cold, and then the air stream is aspired vertically into the tunnel for the cooling of the first portion of the preform, the air being heated. The hot air is then evacuated by the fans (74) through the aerated wall.

So in contrast to the furnace as defined in claim 1 of the present invention, the first air stream is not blown from the upstream, outside the heating tunnel, to the downstream, inside the latter, in the direction of the first portion of the preform (14), by passing through the aerated wall (36).

One of ordinary skill and creativity would not have combined the two documents ARMELLIN et al. and VAUGHN et al., because the first document sets forth a fan that blows air streams whereas the second document teaches a fan that aspires air streams. These two methods are fundamentally different and do not have similar technical aspects.

That is, VAUGHN et al. utilizes "serial" cooling of the two portions of the preform whereas ARMELLIN and the present



application utilize a "parallel" cooling of the two portions of the preform.

Indeed, if a unique air stream was blown transversely to the tunnel, the air blown would be first heated by the heating device and then the neck could not be cooled efficiently by the hot air. The choice of the "blowing method" implies the use of two parallel air streams for an efficient cooling of the preform.

In contrast, the choice of the "aspiration method" does not implies this type of cooling problem because the fresh air cools first the neck of the preform and then it is heated just before being evacuated by the fans (74) through the aerated wall.

Even if one of ordinary skill and creativity would have combined these two documents, neither discloses a furnace having two independent fans, each of one being used to cool one associated portion of the preform.

That is, ARMELLIN et al. teach to associate one fan with two ducts each of them being used to blow a separate air stream in direction of the second portion of the same preform and to the aerated wall respectively. The efficiency of cooling the preform is increased by the use of two fresh air streams for each portion of the preform blown by one unique fan in one section of the tunnel.

In comparison, VAUGHN et al. teach to arrange a plurality of fans along the tunnel, each of them being used to cool the whole preform comprised in an associated section of the

tunnel. The efficiency of cooling the preform is increased by cooling the preform in all the sections of the tunnel, one fan being associated with one section.

One of ordinary skill in the art would have then arranged a plurality of fan as disclosed in ARMELLIN et al. along the tunnel so that each fan blows two separate air stream in each section along the tunnel thus improving the effectiveness with which the neck of the preform is cooled during heating operation.

Nothing in the prior art suggests that a first fan can be associated with the neck of the preform while a second fan can be associated with the wall of the tunnel.

One of ordinary skill and creativity would thus fail to produce claim 1 of the present invention from a knowledge of ARMELLIN et al. and VAUGHN et al. A *prima facie* case of unpatentability has thus not been made. Claims depending upon claim 1 are patentable for at least the above reasons.

This rejection is believed to be overcome, and withdrawal thereof is respectfully requested.

#### Conclusion

The Examiner is thanked for considering the Information Disclosure Statement filed June 19, 2006 and for making an initialed PTO-1449 Form of record in the application.

Prior art of record but not utilized is believed to be non-pertinent to the instant claims.

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

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